

WHAT IS CLAIMED IS:

1. ~~An~~ image display device comprising:

a black correction part performing a black correction processing of correcting a black reproducibility of an image data containing a predetermined number of color data, to output a black-corrected image data; and

an image display means performing an image display on a predetermined screen based on said black-corrected image data,

said black correction part including:

a black-display characteristic specifying means performing a predetermined operation to specify a black-display characteristic specifying data related to a characteristic in displaying black with said image display means;

a black-approximated data calculating means calculating a black-approximated data related to at least one of luminance, chromaticity and tristimulus values in displaying black based on said characteristic in displaying black with said image display means on the basis of said black-display characteristic specifying data; and

a black-correction processing executing means executing said black correction processing to said image data in units of said predetermined number of color data based on said black-approximated data, to output said black-corrected image data.

2. The image display device according to claim 1, wherein

means performing a subtraction processing of subtracting a subtraction data based on said black-approximated data from said image data in units of said predetermined number of color data, to output said black-corrected image data.

3. The image display device according to claim 2, wherein
said subtraction data includes said black-approximated data itself.

5 4. The image display device according to claim 3, wherein
said black correction means includes:

a subtraction means subtracting said black-approximated data from said image
data in units of said predetermined number of color data, to obtain data after subtraction;
and

10 a limiter setting a color data of less than "0" in said predetermined number of
color data contained in said data after subtraction to "0", to obtain said black-corrected
image data.

15 5. The image display device according to claim 2, wherein
said black correction means includes:

a subtraction data calculating means calculating said black-approximated data
itself as said subtraction data when said image data is larger than a predetermined value;
and

20 a subtraction means subtracting said subtraction data from said image data in
units of said predetermined number of color data, to obtain data after subtraction, and
outputting said data after subtraction as said black-corrected image data.

25 6. The image display device according to claim 5, wherein
said subtraction data calculating means includes a subtraction data calculating
means multiplying said black-approximated data with a multiplication factor of less than

"1", when said image data is less than said predetermined value, to obtain said subtraction data.

5 7. The image display device according to claim 1, wherein
said black-correction processing executing means includes:
a look-up table storing a table data; and
a table data writing means, writing data in the form of a table capable of
deriving one of said black-corrected image data from said image data as said table data,
into said look-up table based on said black-approximated data,
10 said look-up table obtains said black-corrected image data based on said image
data by referring to said table data.

15 8. The image display device according to claim 1, wherein
said black-display characteristic specifying data includes data indicating a
characteristic of a reflected light of external light on the surface of said predetermined
screen of said image display means.

20 9. The image display device according to claim 8, wherein
said black-approximated data calculating means includes a black-approximated
data calculating means obtaining a specified value of luminance of a reflected light of
external light based on said black-display characteristic specifying data, and calculating
said black-approximated data such that a difference between the luminance of the color
displayed on said image display means based on said black-approximated data and the
luminance in displaying black with said image display means is equal to said specified
25 value.

10. The image display device according to claim 8, wherein

said black-approximated data calculating means includes a black-approximated data calculating means obtaining specified values of tristimulus values of a reflected light of external light based on said black-display characteristic specifying data, and calculating said black-approximated data such that a difference between the tristimulus values of the color displayed on said image display means based on said black-approximated data and the tristimulus values in displaying black with said image display means is equal to said specified values.

11. The image display device according to claim 8, wherein

said characteristic of a reflected light of external light includes a brightness of the reflected light of external light, and

said black-approximated data calculating means includes a black-approximated data calculating means calculating said black-approximated data based on said black-display characteristic specifying data by referring to a chromaticity data indicating a ratio of tristimulus values of a reflected light of external light and a correlation between a color data and tristimulus values in said image display means.

12. The image display device according to claim 11, wherein

said black-display characteristic specifying data further includes data indicating the kind of an external light, and

said black-approximated data calculating means includes a black-approximated data calculating means calculating said black-approximated data based on said black-display characteristic specifying data by referring to a ratio of tristimulus values of

a reflected light of an external light of the kind specified by said black-display characteristic specifying data, and said chromaticity data.

13. The image display device according to claim 11, wherein
5 said black-display characteristic specifying data further includes data indicating a color temperature of a reflected light of external light, and

said black-approximated data calculating means includes a black-approximated data calculating means calculating said black-approximated data based on said black-display characteristic specifying data by referring to a ratio of tristimulus values of
10 the reflected light suited for said color temperature indicated by said black-display characteristic specifying data, and said chromaticity data.

14. The image display device according to claim 8, wherein
15 said characteristic of the reflected light of external light includes a luminance of the reflected light of external light, and

said black-approximated data calculating means includes a black-approximated data calculating means calculating said black-approximated data based on said black-display characteristic specifying data by referring to a ratio of tristimulus values of a reflected light of external light, and a chromaticity data indicating a correlation between
20 a color data and tristimulus values in said image display means.

15. The image display device according to claim 8, wherein
said characteristic of the reflected light of external light includes tristimulus values of the reflected light of external light, and
25 said black-approximated data calculating means includes a black-approximated

data calculating means calculating said black-approximated data based on said black-display characteristic specifying data, by referring to a chromaticity data indicating a correlation between a color data and tristimulus values in said image display means.

5 16. The image display device according to claim 1, wherein
said black-display characteristic specifying data includes data indicating a characteristic in displaying black with said image display means.

10 17. The image display device according to claim 16, wherein
said black-approximated data calculating means includes a black-approximated data calculating means obtaining a specified value of luminance in displaying black based on said black-display characteristic specifying data, and calculating said black-approximated data such that a difference between the luminance of the color displayed on said image display means based on said black-approximated data and the
15 luminance in displaying black with said image display means is equal to said specified value.

20 18. The image display device according to claim 16, wherein
said black-approximated data calculating means includes a black-approximated data calculating means obtaining specified values of tristimulus values in displaying black based on said black-display characteristic specifying data, and calculating said black-approximated data such that a difference between the tristimulus values of the color displayed on said image display means based on said black-approximated data and the tristimulus values in displaying black with said image display means is equal to said
25 specified values.

19. The image display device according to claim 16, wherein
said characteristic in displaying black includes a brightness in displaying black,
and

5 said black-approximated data calculating means includes a black-approximated
data calculating means calculating said black-approximated data based on said
black-display characteristic specifying data by referring to tristimulus values in displaying
black in the absence of external light, a ratio of tristimulus values of a reflected light of
external light, and a chromaticity data indicating a correlation between a color data and
10 tristimulus values in said image display means.

20. The image display device according to claim 16, wherein
said characteristic in displaying black includes a luminance in displaying black,
and

15 said black-approximated data calculating means includes a black-approximated
data calculating means calculating said black-approximated data based on said
black-display characteristic specifying data by referring to tristimulus values in displaying
black in the absence of external light, a ratio of tristimulus values of a reflected light of
external light, and a chromaticity data indicating a correlation between a color data and
20 tristimulus values in said image display means.

FIG. 20